

REMARKS

Applicants request favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 40-51 are presented for consideration. Claims 40, 44, 46, 47 and 51 are independent. Claims 40, 42 and 43 have been amended to clarify features of the subject invention, while claims 44-51 have been added to recite additional features of the subject invention. Support for these changes and claims can be found in the original application, as filed. Therefore, no new matter has been added.

Applicants request favorable reconsideration and withdrawal of the rejection set forth in the above-noted Office Action.

Claims 40-43 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner objected to specific recitations in claims 40 and 42. To expedite prosecution, Applicants have amended claims 40, 42 and 43, to clarify features of the invention. The Examiner's comments were taken into consideration when amending these claims. Applicant requests reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, second paragraph, in view of these changes.

In addition, Applicants submit that claims 40-51 patentably define features of the method of cutting a substrate, the substrate, and the apparatus for cutting a substrate of the present invention. Accordingly, claims 40-51 should be allowable.

In one aspect of the present invention, independent claim 40 recites a method of cutting a substrate on which two-dimensionally arranged semiconductor elements are installed. The

method includes steps of cutting at least a slice line provided on the substrate while detecting a misalignment of a cutting position from the slice line and correcting the cutting position, cutting the substrate on a side opposing the slice line without correcting a cutting position on the side opposing the slice line, and electrically checking, after the cutting step is completed, a monitor line, comprising an electrical conductor and provided on the substrate between the slice line and an adjacent one of the semiconductor elements installed.

In another aspect of the present invention, independent claim 44 recites a method of cutting a substrate on which two-dimensionally arranged semiconductor elements are installed. The method includes steps of detecting a guide line provided at an area which interposes the semiconductor element and opposes a slice line provided at a cutting position of the substrate, and cutting the substrate along the slice line while correcting a cutting position based on the detected guide line.

In still another aspect of the present invention, independent claim 46 recites a method of cutting a substrate on which two-dimensionally arranged semiconductor elements are installed. The method includes steps of cutting the substrate along a slice line provided at a cutting position of the substrate, detecting, during the cutting of the substrate, a guide line provided at an area which interposes the semiconductor element and opposes the slice line, the guide line being provided corresponding to the slice line, to detect misalignment, and cutting the substrate while correcting the misalignment.

In a further aspect of the present invention, independent claim 47 recites a substrate on which two-dimensionally arranged semiconductor elements are installed. The substrate includes

a slice line provided at a cutting position on the substrate, and a guide line provided for detecting the cutting position on the substrate. The guide line is provided at an area which interposes the semiconductor element and opposes the slice line on the substrate.

In yet another aspect of the present invention, independent claim 51 recites an apparatus for cutting a substrate on which two-dimensionally arranged semiconductor elements are installed. The apparatus includes a cutting device, a moving device for relatively moving the cutting device with respect to the substrate, a position detecting device for detecting a cutting position of the substrate, and an adjusting device for adjusting the cutting position based on positional information by the position detecting device. The position detecting device detects a guide line provided at an area which interposes the semiconductor element and opposes a slice line provided at the cutting position, the guide line being provided corresponding to the slice line, thereby detecting the cutting position.

Generally speaking, when a guide line provided adjacent to a slice line, which is a cutting position of the substrate, is detected, and the substrate is cut in a manner such that a stage is rotated and a rotary axis is fixed in a manner such that the slice line, which is used as an alignment mark displayed on a computer screen through a camera fixed to a blade unit parallel with the slice direction, namely, the stage moving direction, it becomes difficult to detect the guide line provided adjacent to the slice line due to dust generated during cutting of the substrate, or water being used for removing the dust. This is discussed in more detail in the subject specification on page 9 at lines 3-8. Since it becomes difficult to maintain the accuracy in cutting

the substrate, a possibility arises that positional misalignment or bending of the cutting line will occur.

The present invention, as recited in independent claims 40, 44, 46, 47 and 50, overcomes such drawbacks associated with conventional techniques. The present invention, as recited in the independent claims, can achieve the following effects. First, side surfaces of adjacent substrates can be accurately cut. Second, the substrates can be adhered on substantially the same plane, while eliminating or reducing a gap between adjacent substrates. Such features of the present invention are discussed in more detail in the subject specification on page 14 at lines 14-18.

Applicants submit that the cited art, such as U.S. Patent No. 3,398,620 to Gautron, does not teach or suggest the salient features of Applicants' present invention as recited in the independent claims. Accordingly, the cited art likewise does not teach or suggest the advantages mentioned above, which are provided by the present invention.

For the foregoing reasons and inasmuch as no art has been applied against the pending claims, Applicants submit that the present invention, as recited in independent claim 40, 44, 46, 47 and 51, is patentably defined over the cited art.

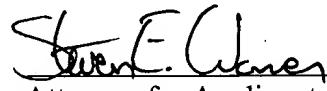
Dependent claims 41-43, 45 and 48-50 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicants further submit that the instant application is in condition for allowance.

Favorable reconsideration, withdrawal of the rejection set forth in the above-noted Office Action and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



Attorney for Applicants
Steven E. Warner
Registration No. 33,326

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200
SEW/eab

DC_MAIN 162069v1